

## Decomposition by a Single Pole

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insulated in the air by suspenders of silk, so that the electricity passed through its entire length: decomposition took place exactly as in former cases, alkali and acid appearing at the two extremities in their proper places.

192. Experiments were then made both with sulphate of soda and iodide of potassium, to ascertain if any diminution of decomposing effect was produced by such great extension as those just described of the moist conductor or body under decomposition; but whether the contact of the decomposing point connected with the discharging train was made with turmeric paper touching the prime conductor, or with other turmeric paper connected with it through the seventy feet of string, the spot of alkali for an equal number of turns of the machine had equal intensity of colour. The same results occurred at the other decomposing wire, whether the salt or the iodide were used; and it was fully proved that this great extension of the distance between the poles produced no effect whatever on the amount of decomposition, provided the same *quantity* of electricity were passed in both cases (113).

193. The negative point of the discharging train, the turmeric paper, and the string were then removed; the positive point was left resting upon the litmus paper, and the latter touched by a piece of moistened string held in the hand. A few turns of the machine evolved acid at the positive point as freely as before.

194. The end of the moistened string, instead of being held in the hand, was suspended by glass in the air. On working the machine the electricity proceeded from the conductor through the wire point to the litmus paper, and thence away by the intervention of the string to the air, so that there was (as in the last experiment) but one metallic pole; still acid was evolved there as freely as in any former case.

195. When any of these experiments were repeated with electricity from the negative conductor, corresponding effects were produced whether one or two decomposing wires were used. The results were always constant, considered in relation to the *direction* of the electric current.

196. These experiments were varied so

as to include the  
action of only one metallic pole, but that  
not the pole connected  
with the machine. Turmeric paper was  
moistened in solution  
of sulphate of soda, placed upon glass,  
and connected with the  
discharging train (28) by a  
decomposing wire (48); a piece  
of wet string was hung from it, the  
lower extremity of which

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